KENTUCKY STATEWIDE WOOD ENERGY TEAM

Felling a few LOGS for Energy

Logistics
Opportunities
Growth
Sustainability











Forestry Extension







Midwest Clean Energy Enterprise LLC



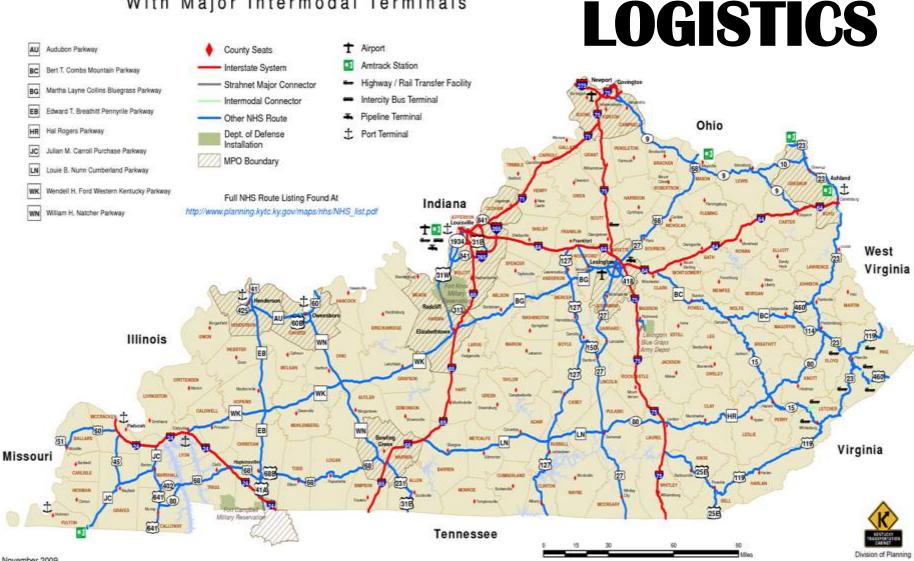




Kentucky National Highway System

With Major Intermodal Terminals











Meets or exceeds

PREMIUM GRADE STANDARDS

Material	. 100% Hardwood
Ash	Less than 1%
Fines	. Less than 0.5%
	ess than 300 PPM

LOGISTICS

- What are the most economical methods of getting low value forest resources from the woodland to an energy market?
- What equipment is currently available, but not widely used, that can improve efficiencies in this area?
- What new equipment and/or methodologies are needed to improve energy density, lower moisture content, increase fuel quality, and reduce environmental concerns in this area?
- What key educational topics need to be addressed to communicate existing advancements to current industry practices in this area?
- Are there any current laws and/or policies that are creating barriers for lowering costs in this area?
- What financial programs and incentives are currently available or are needed to help deploy better techniques and technologies in this area?
- How can the above issues be addressed in regards to local, regional, and international market opportunities?

OPPORTUNITIES 0 6 Categories of Feedstocks Integrated Operations Other Removals Other Forestland Thinnings Mill Residues Urban Wood Waste 125 500 Miles

Pulpwood

BICENERGY in Kentucky





- Biodiesel
- Biopower
- Combined Heat & Power
- Ethanol
- Thermal Energy Only
- Wood Pellet

Biopower, biofuel and
bioproduct facilities
provide jobs for
Kentucky's communities,
particularly in rural areas,
where 23 percent of the
population lives in poverty and 11
percent are unemployed.

Source: U.S. Department of Agriculture



















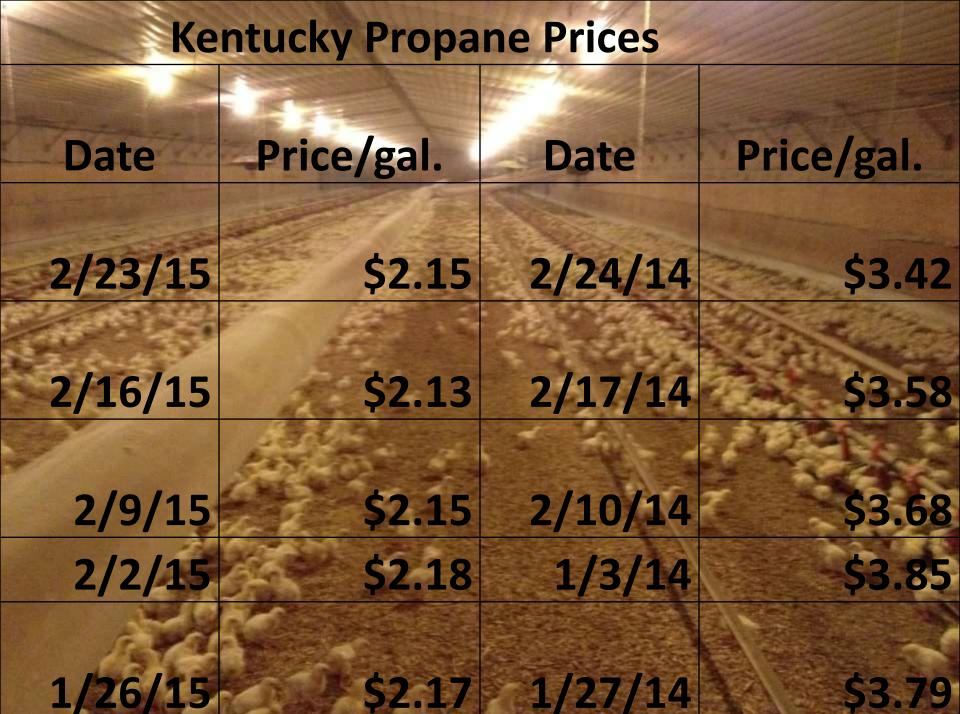




OPPORTUNITIES

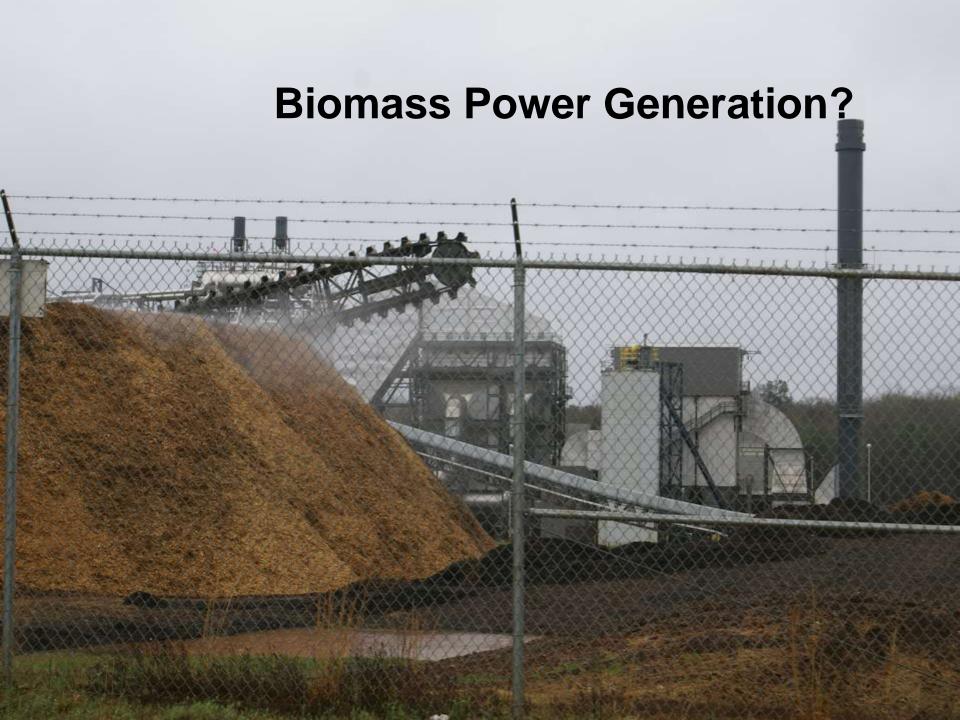
- What are the current energy market opportunities for low value forest products?
- What traditional forest product resources are available for use as energy feedstocks?
- What diseased, insect infested, and/or storm damaged wood resources are potentially available for energy markets?
- How can the awareness of these resources and market opportunities be improved?
- What standards or other tools are needed to improve the fair value of these resources to both the sellers and buyers of these products?
- Are the market values for these products widely known and what can be done to improve the market transparency?
- What policies, regulations, or other governmental barriers are constraining the efficiency or profitability for existing wood to energy segments?





\$3.79







Site Selection; Items of Consideration

Market

- growth potential
- volume mandates
- proximity to feedstock suppliers
- proximity to customers
- status of competitors (best in the world)

Feedstock

- availability
- distance from proposed plant
- delivered price (includes transport costs)
- sustainability (will it be available for the long term)
- competition from other possible uses (fuels, power, other renewable products)

Infrastructure

- road network including trucking costs
- rail network including transport costs
- waterway/seaport proximity including transport costs
- power availability and rates
- process water availability and proximity
- proximity to international air travel
- potential for "clustering" or co-location

Government Programs, Support Mechanisms/Incentives, Mandates

- national
- lander/provincial/state
- local

Local Community Support

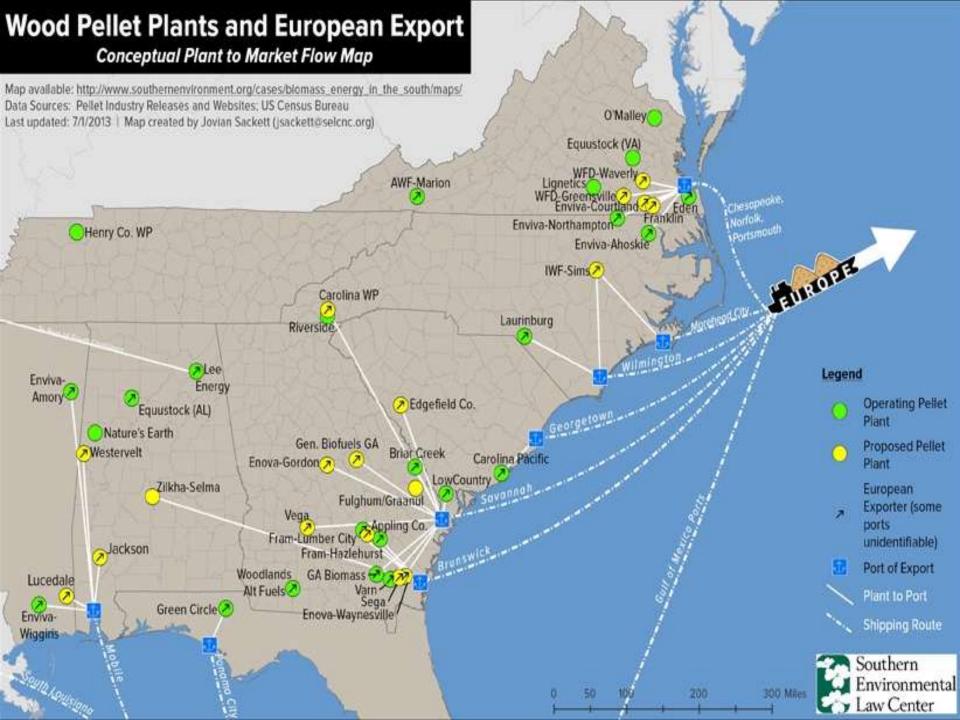
- community leaders
- farm groups
- industry associations (local and national)
- forestry sector
- possible industrial partnering opportunities
- municipal politicians
- media
- service clubs
- local environmental groups
- the general public

Economics & Project Finance

- local factors affecting project cost
- materials
- availability of skilled labour
- cost of labour
- unemployment rate
- return on investment
- with government incentives
- without government incentives

Other

- national and international environmental groups support
- proximity to other key stakeholders (media, politicians, public interest groups)



Financial Incentives





http://agpolicy.ky.gov

- •Loans
- •Grants

http://www.ced.ky.gov

- New Energy Ventures Fund
- •Incentive for Energy Independence Act
- •Kentucky Environmental Stewardship Act

http://energy.ky.gov

Energy Research Grant



http://revenue.ky.gov

- •Biodiesel Production or Blending Credit
- •Ethanol Producer Credit
- Cellulosic Ethanol Producer Credit

GROWTH

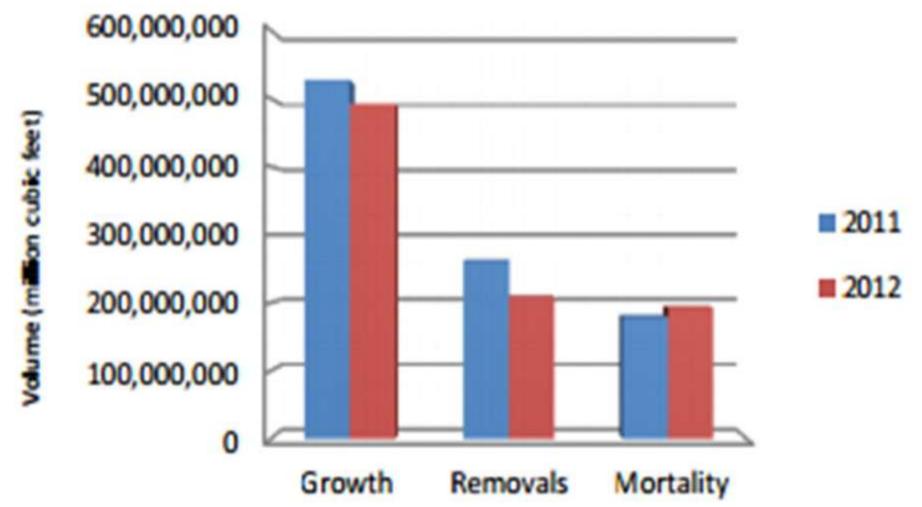
- How can more forest products be made accessible to potential energy users?
- What strategies need to be developed to better utilize future diseased, insect infested, or storm damaged resources?
- Where are the best opportunities for market growth? Residential, Agricultural, Commercial, Industrial, Institutional, Utilities, and/or Exports?
- What tools are needed to enable potential users to evaluate to value of these resources?
- What are the best opportunities for establishing Short Rotation Woody Crops for biomass energy in KY land resources, species, establishment method, etc.?
- What resources need to be coordinated to increase interest in this area equipment, land owners, coal companies, rootstock providers, end users, etc.?
- What policies, regulations, or other governmental barriers are restricting growth potential in wood for energy utilization?
- Are there specific incentives, programs, legislation, or industry initiatives that need to be considered to generate new wood to energy opportunities?







Annual Growth, Removals & Mortality



Forest Inventory and Analysis Fact Sheet Kentucky 2012

http://forestry.ky.gov/ForestryPublications/Forestry%20Publications/2012%20Kentucky%20Forest%20Inventory%20and%20Analysis%20Fact%20Sheet.pdf



Southern Appalachian Hardwood Forest Reclamation Initiative













- Kentucky Chapter of the American Chestnut Foundation
- Kentucky Division of Mine Reclamation and Enforcement
- Mountain Association for Community Economic Development
- Natural Resources
 Conservation Service

- Kentucky Department of Fish and Wildlife Resources
- Office of Surface Mining Reclamation and Enforcement
- Kentucky Division of Conservation
- Energy and Environment Cabinet, Department for Natural Resources







SUSTAINABILITY

- How can sustainability be defined in relation to environmental, energy, economic, and social considerations?
- What sustainability or forest stewardship certifications currently exist?
- What are the best methods of promoting awareness of these programs?
- Who are the Kentucky contacts for each program?
- What are the key sustainability issues that need to be addressed?
- How do these differ for local, regional, or international market channels?



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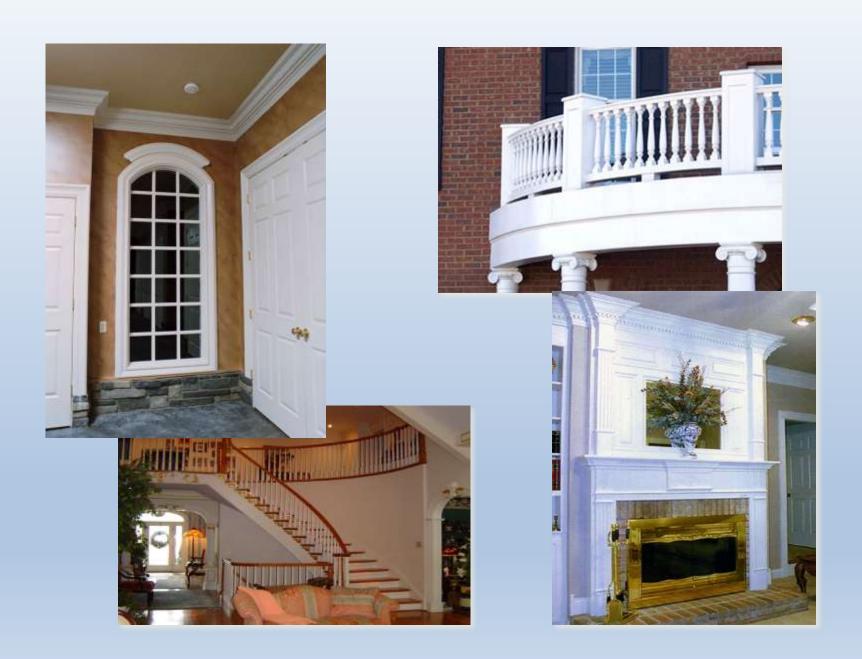


Our Products









Millwork Production

























Over 1 million boardfeet of Dry Kiln Capacity



Produces over 100 tons per day of wood waste







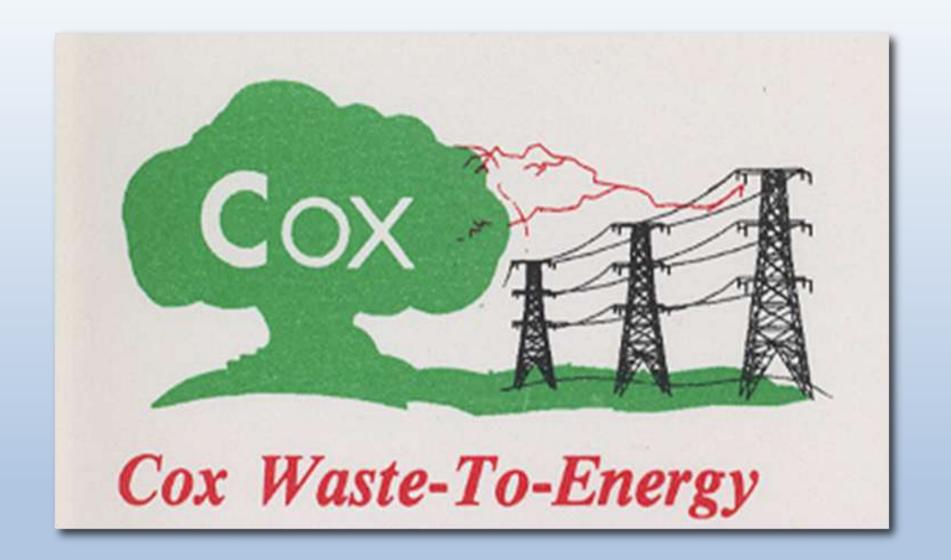




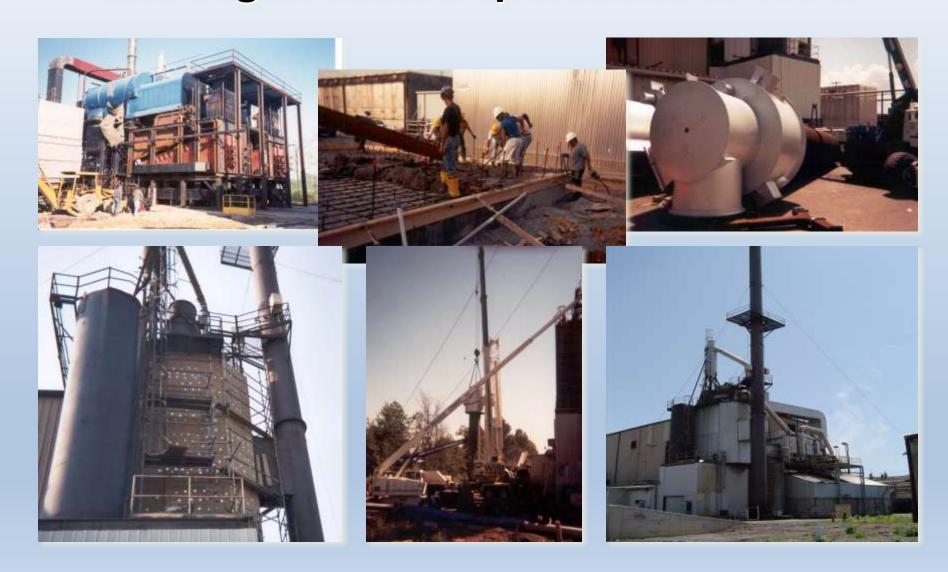








Purchased Cogeneration Plant in 1992 and began limited operations in 1994.



4 MW Condensing Turbine







1 MW Backpressure Turbine



Fuel Support Operations









Fuel Supply



Cox Interior/Boyle County Wood Waste Collection Program





With Industrial Partners:

Denyo Manufacturing Corp.

and

Hobart Corporation





Cox Interior/Marion County Wood Waste Collection Program

Community collection site



FOR
STORM / TREE
DEBRIS